Simulation model for multi-level distribution system planning

Full text Pdf (1.19 MB)

Source **Winter Simulation Conference** archive
Proceedings of the 14th conference on Winter Simulation - Volume 2 table of contents
San Diego, California
SESSION: Inventory/logistics table of contents
Pages: 491 - 499
Year of Publication: 1982
ISBN:0-123-454678-0

Authors Neal McCollom University of Missouri - Columbia
Leland Blank Texas A&M University

Sponsors SIGSIM: ACM Special Interest Group on Simulation and Modeling
ORSA : Operations Research Society of America
SCS : The Society for Computer Simulation International
IIE : Institute of Industrial Engineers
NBS : National Bureau of Standards
IEEE-CS : Computer Society
IEEE-SMCS : Systems, Man & Cybernetics Society
TIMS/CSG : The Institute of Management Science College on Simulation and Gaming

Publisher Winter Simulation Conference

↑ ABSTRACT

The analysis of multi-level inventory/distribution systems has been pursured from both the analytical and similation viewpoints. The simulation model IDIMS (Inventory and Distribution of Items in a Multi-echelon System) is presented and demonstrated in this paper. IDIMS can handle up to ten separate items at four levels of a distribution system, including a limited-capacity, forecast-driven production entity. The use of continuous or periodic review inventory management systems are allowed and all stochastic events are generated via user-specified probability distributions or empirical distributions input to IDIMS. The use and alteration of system architecture, serving responsibilities, service levels and cost parameters are easily accomplished via input and reasonable default values. IDIMS has been developed for use by industrial management/analysis personnel as well as professors and students in an academic environment to study a wide range of multi-item, multi-level production/inventory/distribution systems.

↑ REFERENCES

Note: OCR errors may be found in this Reference List extracted from the full text article. ACM has opted to expose the complete List rather than only correct and linked references.

1 Blank, L. T., "A Simulator For Multi-Level Distribution Systems," <u>Simulation</u>,Vol. 32,no. 2, February 1979, pp. 54--62

2 Burns, ?. F., Sivazlian, B. D., "Dynamic Analysis of Multi-Echelon Supply Systems," <u>Computers and Industrial Engineering</u>,vol. 2,February 1978, pp. 181--193

3 Clark, A. J., "A Dynamic, Single-Item, Multi-Echelon Inventory Model," The RAND Corporation, RM-2297, Santa Monica, Calif., 1958

4 Clark, A. J., "The Use of Simulation to Evaluate a Multi-Echelon, Dynamic Inventory Model," <u>Naval Research Logistics Quarterly</u>,vol. 7,no. 4, December 1960, pp. 429--445

5 Clark, A. J., "An Informal survey of Multi-Echelon Inventory Theory," <u>Naval Research Logistics Quarterly</u>, vol. 19,no. 4,December 1960, pp. 621--650

6 Clark, A. J., Scarf, H., "Optimal Policies for a Multi-Echelon Inventory Problem," <u>Management Science</u>,vol. 6,no. 4,July 1960, pp. 475--490

7 Der Tatevasion, T. J., "Use of Parameter Adjustment Techniques in the Simulation of a Multi-Echelon Inventory/Distribution System," <u>Thesis</u>, Texas A&M University, College Station, Texas 1981

8 Deuermeyer, B. L., Schwarz, L. B., "A Model for the Analysis of System Service Level in Warehouse-Retailer Distribution Systems: The Identical Retailer Case," <u>Management Science</u>

9 Geoffrion, A. M., "Making Better Use of Optimization Capability in Distribution System Planning," <u>AIIE Transactions</u>, vol. 11,no. 2,June 1979, pp. 96--108

10 Hadley, G., Whitin, T. M., <u>Analysis of Inventory Systems</u>, Prentice-Hall Intl., Englewood Cliffs, New Jersey, 1963

11 Heier, V. M., Jones, L. L., "Simulating a Physical Distribution System," <u>10th Annual Simulation Symposium Proceedings</u>, Tampa, Florida March 1977, pp. 229--260

12 Hochstaeder, D., "An Approximation of the Cost Function for Multi-Echelon Inventory Models," <u>Management Science</u>, vol. 16,no. 11,July 1970, pp. 717--727

13 Love, R. F., "A Two Station Stochastic Inventory Model with Exact Methods of Computing Optimal Policies." Naval Research Logistics Quarterly vol. 14,no. 2,June 1967, pp. 185--217

14 Meyer, U., Groover, M. P., "Multi-Echelon Inventory Systems Using Continuous Systems Analysis and Simuation," <u>AIIE Transactions</u>,vol. 4,no. 2, December 1972, pp. 318--327

15 McCollom, N. N., "A Systems Simulation Approach to Multi-Echelon Inventory Analysis," <u>Dissertation</u>, Texas A&M University, College Station, Texas, 1981

16 Muchstadt, J. A., "A Model for a Multi-Item, Multi-Echelon, Multi-Indentured Inventory System," <u>Management Science</u>,vol. 20,no.4, December 1973, pp. 472--481

17 Parr, J. O., "Formula Approximations to Browns Service Function," <u>Production & Inventory Management<</u>, vol. 13,no. 1,First Quarter 1972, pp. 84--86

18 Peterson, R., Silver, A., <u>Decision Systems for Inventory Management and Production

Planning</u>, John Wiley & Sons, Inc., New York, New York, 1979

19 Schwarz, B., "A Simple Continuous Review Deterministic One-Warehouse N-Retailer Inventory Problem," <u>Management Science</u>, vol. 19, no. 5,January 1973, pp. 555--566

20 Schwarz, B., Schrage, L., "Optimal and System Myopic Policies for Multi-Echelon Production/Inventory Assembly Systems," <u>Management Science</u>, vol. 21,no. 11,July 1975, pp. 1285--1294

21 Sherbrooke, C. C., "METRIC: A Multi-Echelon Technique for Recoverable Item Control," <u>Operations Research</u>, vol. 16,no. 1,January-February 1968, pp. 122--141

22 Thornley, G., "National Distribution in F. W. Woolworth," <u>Journal of Operations Research Society</u>,vol. 29,no. 5,May 1978, pp. 419--425

23 Von Lanzenauer, C. H., "A Production Scheduling Model by Bivalent Linear Programming," <u>Management Science</u>, vol. 17,no. 1,January 1971, pp. 105--111

24 Wagner, H. M., "Research Portfolio for Inventory Management and Production Planning Systems," <u>Operations Research</u>,vol. 28,no. 2,May-June 1980, pp. 445--475

25 Zangwill, W. I., "A Deterministic Multiproduct, Multifacility Production and Inventory Model," <u>Operations Research</u>, vol. 14,no. 3,May-June 1966, pp. 486--507

Collaborative Colleagues:

Leland Blank: Neal McCollom
Sallie Nelson

Neal McCollom: Leland Blank

Terms used
inventory control inventory control and **price theory**

Found **401** of **84,711**

Results 1 - 20 of 200
Best 200 shown

Result page: **1** 2 3 4 5 6 7 8 9 10 next

Relevance scale

1 Order processing and inventory control software related to computer user satisfaction: an interactive online evaluation system
Avi Rushinek, Sara Rushinek
May 1985 **Proceedings of the 1985 ACM SIGSMALL symposium on Small systems**
Publisher: ACM Press
Full text available: pdf(869.95 KB) Additional Information: full citation, abstract, references

The selection of an order processing and inventory control (OPICS) system is a complicated process. The overall satisfaction derived from a system depends on many variables. This study analyzes the influence of OPICS predictor variables on overall satisfaction as determined by multiple regression. This study confirms the theories that suggest that OPICS ease of operation, reliability of computer, and ease of programming are the major determinants of overall computer user satisfaction. ...

2 Curriculum recommendations for graduate professional programs in information systems
May 1972 **Communications of the ACM**, Volume 15 Issue 5
Publisher: ACM Press
Full text available: pdf(4.00 MB) Additional Information: full citation, references, citings

Keywords: education, information analysis, information systems development, management information systems, management systems, system design, systems analysis

3 A cost-benefit flow control for reliable multicast and unicast in overlay networks
Yair Amir, Baruch Awerbuch, Claudiu Danilov, Jonathan Stanton
October 2005 **IEEE/ACM Transactions on Networking (TON)**, Volume 13 Issue 5
Publisher: IEEE Press
Full text available: pdf(651.18 KB) Additional Information: full citation, abstract, references, index terms

When many parties share network resources on an overlay network, mechanisms must exist to allocate the resources and protect the network from overload. Compared to large physical networks such as the Internet, in overlay networks the dimensions of the task are smaller, so new and possibly more effective techniques can be used. In this work we

take a fresh look at the problem of flow control in multisender multigroup reliable multicast and unicast and explore a cost-benefit approach that works in ...

Keywords: flow control, overlay networks, reliable multicast

4 Transaction chopping: algorithms and performance studies
Dennis Shasha, Francois Llirbat, Eric Simon, Patrick Valduriez
September 1995 **ACM Transactions on Database Systems (TODS)**, Volume 20 Issue 3
Publisher: ACM Press
Full text available: pdf(2.34 MB) Additional Information: full citation, abstract, references, citings, index terms, review

Chopping transactions into pieces is good for performance but may lead to nonserializable executions. Many researchers have reacted to this fact by either inventing new concurrency-control mechanisms, weakening serializability, or both. We adopt a different approach. We assume a user who—has access only to user-level tools such as (1) choosing isolation degrees 1ndash;4, (2) the ability to execute a portion of a transaction using multiversion read consistency, and (3) the a ...

Keywords: locking, multidatabase, serializability, tuning

5 On the use of GPSS to model hierarchical control systems in a manufacturing environment
Ronald J. Degen, Thomas J. Schriber
December 1976 **Proceedings of the 76 Bicentennial conference on Winter simulation**
Publisher: Winter Simulation Conference
Full text available: pdf(606.77 KB) Additional Information: full citation, abstract, references, citings, index terms

The concept of hierarchical, multilevel control systems is reviewed in the context of manufacturing systems, and the strata typically composing such control systems are discussed. The possibility of building simulation models of hierarchical systems, using FORTRAN routines to represent the higher-level strata, and GPSS to model the actual manufacturing steps themselves, is introduced. A hypothetical, nine-product toy-manufacturing system is described, and some of the specific features of a ...

6 Competitive solutions for online financial problems
Ran El-Yaniv
March 1998 **ACM Computing Surveys (CSUR)**, Volume 30 Issue 1
Publisher: ACM Press
Full text available: pdf(331.62 KB) Additional Information: full citation, abstract, references, citings, index terms

This article surveys results concerning online algorihtms for solving problems related to the management of money and other assets. In particular, the survey focucus us search, replacement, and portfolio selection problems

7 Papers: e-Man and his e-Mancipation
Markku I. Nurminen
August 2005 **Proceedings of the 4th decennial conference on Critical computing: between sense and sensibility CC '05**
Publisher: ACM Press
Full text available: pdf(505.44 KB) Additional Information: full citation, abstract, references

In this paper, we address two issues of Critical Computing (CC). The first concern is in the

conceptualization of the extended client group of CC when people are faced with information technology in other roles than traditional work roles. The conceptualization suggested in this paper is based on the interpretation of information technology as services and in particular as self-services. The new user is tentatively called as e-Man. The second concern is about emancipation and empowerment of the ...

Keywords: IT Service, articulation work, control, emanicipation, self-service

8 A Status Report on Computing Algorithms for Mathematical Programming
William W. White
September 1973 **ACM Computing Surveys (CSUR)**, Volume 5 Issue 3
Publisher: ACM Press
Full text available: pdf(3.02 MB) Additional Information: full citation, references, citings, index terms

9 Formal aspects of concurrency control in long-duration transaction systems using the NT/PV model
Henry F. Korth, Greg Speegle
September 1994 **ACM Transactions on Database Systems (TODS)**, Volume 19 Issue 3
Publisher: ACM Press
Full text available: pdf(3.23 MB) Additional Information: full citation, abstract, references, citings, index terms, review

In the typical database system, an execution is correct if it is equivalent to some serial execution. This criterion, called serializability, is unacceptable for new database applications which require long-duration transactions. We present a new transaction model which allows correctness criteria more suitable for these applications. This model combines three enhancements to the standard model: nested transactions, explicit predicates, and multiple versions. These features yield the name o ...

Keywords: concurrency control protocol, semantic information, transaction processing

10 Sequential patterns in information systems development: an application of a social process model
Daniel Robey, Michael Newman
January 1996 **ACM Transactions on Information Systems (TOIS)**, Volume 14 Issue 1
Publisher: ACM Press
Full text available: pdf(2.38 MB) Additional Information: full citation, abstract, references, citings, index terms, review

We trace the process of developing and implementing a materials management system in one company over a 15-year period. Using a process research model developed by Newman and Robey, we identify 44 events in the process and define them as either encounters or episodes. Encounters are concentrated events, such as meetings and announcements, that separate episodes, which are events of longer duration. By examining the sequence of events over the 15 years of the case, we identify a pattern of r ...

Keywords: social processes, system implementation

11 Social Analyses of Computing: Theoretical Perspectives in Recent Empirical Research

Rob Kling
March 1980 **ACM Computing Surveys (CSUR)**, Volume 12 Issue 1
Publisher: ACM Press
Full text available: pdf(3.98 MB) Additional Information: full citation, references, citings, index terms

12 Evaluation of a (R,s,Q,c) multi-item inventory replenishment policy through simulation
Carlos B. Cerdaramirez, Armando J. Espinosa de los Monteros F.
December 1997 **Proceedings of the 29th conference on Winter simulation**
Publisher: ACM Press
Full text available: pdf(653.42 KB) Additional Information: full citation, references, index terms

13 Access control analysis: A model-checking approach to analysing organisational controls in a loan origination process
Andreas Schaad, Volkmar Lotz, Karsten Sohr
June 2006 **Proceedings of the eleventh ACM symposium on Access control models and technologies SACMAT '06**
Publisher: ACM Press
Full text available: pdf(383.35 KB) Additional Information: full citation, abstract, references, index terms

Demonstrating the safety of a system (ie. avoiding the undesired propagation of access rights or indirect access through some other granted resource) is one of the goals of access control research, e.g. [1-4]. However, the flexibility required from enterprise resource management (ERP) systems may require the implementation of seemingly contradictory requirements (e.g. tight access control but at the same time support for discretionary delegation of workflow tasks and rights).To aid in the analys ...

Keywords: delegation, model-checking, organisational control, revocation, separation

14 Curriculum recommendations for undergraduate programs in information systems
J. Daniel Couger
December 1973 **Communications of the ACM**, Volume 16 Issue 12
Publisher: ACM Press
Full text available: pdf(3.23 MB) Additional Information: full citation, references, citings

Keywords: education, information analysis, information systems, management systems, systems analysis, systems design, undergraduate curricula

15 The interdisciplinary study of coordination
Thomas W. Malone, Kevin Crowston
March 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 1
Publisher: ACM Press
Full text available: pdf(584.94 KB) Additional Information: full citation, abstract, references, citings, index terms, review

This survey characterizes an emerging research area, sometimes called coordination theory, that focuses on the interdisciplinary study of coordination. Research in this area uses and extends ideas about coordination from disciplines such as computer science, organization theory, operations research, economics, linguistics, and psychology. A key insight of the framework presented here is that coordination can be seen as the process of

managing dependencies ...

Keywords: computer-supported cooperative work, coordination, coordination science, coordination theory, groupware

16 Heraclitus: elevating deltas to be first-class citizens in a database programming language
Shahram Ghandeharizadeh, Richard Hull, Dean Jacobs
September 1996 **ACM Transactions on Database Systems (TODS)**, Volume 21 Issue 3
Publisher: ACM Press
Full text available: pdf(3.76 MB) Additional Information: full citation, abstract, references, citings, index terms, review

Traditional database systems provide a user with the ability to query and manipulate one database state, namely the current database state. However, in several emerging applications, the ability to analyze "what-if" scenarios in order to reason about the impact of an update (before committing that update) is of paramount importance. Example applications include hypothetical database access, active database management systems, and version management, to name a few. The central th ...

Keywords: active databases, deltas, execution model for rule application, hypothetical access, hypothetical database state

17 Link and channel measurement: A simple mechanism for capturing and replaying wireless channels
Glenn Judd, Peter Steenkiste
August 2005 **Proceeding of the 2005 ACM SIGCOMM workshop on Experimental approaches to wireless network design and analysis E-WIND '05**
Publisher: ACM Press
Full text available: pdf(6.06 MB) Additional Information: full citation, abstract, references, index terms

Physical layer wireless network emulation has the potential to be a powerful experimental tool. An important challenge in physical emulation, and traditional simulation, is to accurately model the wireless channel. In this paper we examine the possibility of using on-card signal strength measurements to capture wireless channel traces. A key advantage of this approach is the simplicity and ubiquity with which these measurements can be obtained since virtually all wireless devices provide the req ...

Keywords: channel capture, emulation, wireless

18 Application of a simulation optimization system for a continuous review inventory model
Jorge Haddock, Golgen Bengu
December 1987 **Proceedings of the 19th conference on Winter simulation**
Publisher: ACM Press
Full text available: pdf(795.05 KB) Additional Information: full citation, references, citings, index terms

19 Information Systems in Perspective
J. D. Aron
December 1969 **ACM Computing Surveys (CSUR)**, Volume 1 Issue 4
Publisher: ACM Press

Full text available: pdf(2.22 MB) Additional Information: full citation, references, citings, index terms

20 Regenerative Simulation with Internal Controls
Donald L. Iglehart, Peter A. W. Lewis
April 1979 **Journal of the ACM (JACM),** Volume 26 Issue 2
Publisher: ACM Press
Full text available: pdf(633.78 KB) Additional Information: full citation, references, citings, index terms

Results 1 - 20 of 200 Result page: **1** 2 3 4 5 6 7 8 9 10 next

A system for large econometric models—management, estimation, and simulation

Full text Pdf (907 KB)

Source **ACM/CSC-ER** archive
Proceedings of the ACM annual conference - Volume 2 table of contents
Boston, Massachusetts, United States
Pages: 964 - 973
Year of Publication: 1972

Authors M. C. McCracken
Carl A. Sonnen

Sponsor ACM: Association for Computing Machinery

Publisher ACM Press New York, NY, USA

DOI Bookmark: Use this link to bookmark this Article: http://doi.acm.org/10.1145/800194.805884
What is a DOI?

↑ ABSTRACT

A software system to build econometric models that have nonlinear relations requiring simultaneous solution is described. The system is presented in the context of a Canadian government research project that constructed a model of almost 1,600 equations. The system, which is designed to exploit the modular nature of the modelling process, contains programs that assist in the tasks of data management, estimation, solution, analysis, and reporting. Programs are provided to facilitate documentation of the model and error checking at the critical decision points of the model building process. Inputs of researchers generally are in the language familiar to economists and other social scientists, and little training has been required to integrate new researchers into the Canadian project. All parts of the system, which is fully documented, are operational. Some programs are operational on several systems.

↑ REFERENCES

Note: OCR errors may be found in this Reference List extracted from the full text article. ACM has opted to expose the complete List rather than only correct and linked references.

1 Economic Council of Canada, An Overview of CANDIDE Model 1.0, (forthcoming), Ottawa

2 Bank of Canada, User's Guide: DATABANK System, 1970, Ottawa

3 McCracken, M. C., "A Computer System for Econometric Research", Social Science Information, Vol. VI, No. 5, pp. 151-158

4 Statistics Canada, Canadian Socio-Economic Information Management System, 1971, Ottawa

5 McCracken, M.C., MASSAGER User's Manual, 1971, Ottawa

6 Friedman, B.M., "Econometric Simulation Difficulties: An Illustration", Review of Economics and Statistics, Vol. LIII, No. 4, Nov. 1971, pp. 381-384

7 Steward, D., "Partitioning and Tearing Systems of Equations", SIAM Journal, Series B, Vol. 2, No. 2, 1965, pp. 345-365

↑ **INDEX TERMS**

Primary Classification:
J. Computer Applications
↪ **J.4** SOCIAL AND BEHAVIORAL SCIENCES
↪ **Subjects:** Economics

Additional Classification:
D. Software
↪ **D.2** SOFTWARE ENGINEERING
↪ **D.2.9** Management
↪ **Subjects:** Cost estimation

K. Computing Milieux
↪ **K.6** MANAGEMENT OF COMPUTING AND INFORMATION SYSTEMS

General Terms:
Economics, Management

Keywords:
Canada, Econometric research process, Economic research, Equation estimation, Information management, Large model, Nonlinear systems, Project management, Research management, Simulation

↑ **Collaborative Colleagues:**

M. C. McCracken: Carl A. Sonnen
Carl A. Sonnen: M. C. McCracken

↑ **Peer to Peer - Readers of this Article have also read:**

- Data structures for quadtree approximation and compression **Communications of the ACM** 28, 9
  Hanan Samet

- A hierarchical single-key-lock access control using the Chinese remainder theorem **Proceedings of the 1992 ACM/SIGAPP Symposium on Applied computing**
  Kim S. Lee , Huizhu Lu , D. D. Fisher

- The GemStone object database management system **Communications of the ACM** 34, 10

Paul Butterworth , Allen Otis , Jacob Stein

- Putting innovation to work: adoption strategies for multimedia communication systems
  Communications of the ACM 34, 12
  Ellen Francik , Susan Ehrlich Rudman , Donna Cooper , Stephen Levine

- An intelligent component database for behavioral synthesis **Proceedings of the 27th ACM/IEEE conference on Design automation**
  Gwo-Dong Chen , Daniel D. Gajski

PORTAL
USPTO

Subscribe (Full Service) Register (Limited Service, Free) Login

Search: The ACM Digital Library The Guide

SEARCH

THE ACM DIGITAL LIBRARY

Feedback Report a problem Satisfaction survey

Expert systems for economic/business forecasting

Full text Pdf (533 KB)

Source **Symposium on Applied Computing** archive
Proceedings of the 1993 ACM/SIGAPP symposium on Applied computing: states of the art and practice table of contents
Indianapolis, Indiana, United States
Pages: 511 - 516
Year of Publication: 1993
ISBN:0-89791-567-4

Authors E. Shnaider
P. Hurtado
M. Schneider

Sponsor SIGAPP: ACM Special Interest Group on Applied Computing

Publisher ACM Press New York, NY, USA

Additional Information: references index terms review collaborative colleagues peer to peer

Tools and Actions: Find similar Articles Review this Article
Save this Article to a Binder Display Formats: BibTex EndNote ACM Ref

DOI Bookmark: Use this link to bookmark this Article: http://doi.acm.org/10.1145/162754.165215
What is a DOI?

↑ REFERENCES

Note: OCR errors may be found in this Reference List extracted from the full text article. ACM has opted to expose the complete List rather than only correct and linked references.

1 Barry G. Silverman, Expert systems for business, Addison-Wesley Longman Publishing Co., Inc., Boston, MA, 1987

2 Shnaider, E. and Kandel, A. The Use of Fuzzy Set Theory for Forecasting Corporate Tax Revenues. Fuzzy Sets and Systems, Volume 31, 1989.

3 Shnaider, E., Simmons, J. and Bandler, W. Application of Implication Operators vs. Regression Analysis: a Case Study of Factors Influencing Differentials in Price Levels among Counties in Florida. International Journal of Intelligent Systems, Volume 7, No. 2, 1992.

4 Shnaider, E., Lynch, T. and Bandler, W. Implication Operators vs. Regression Analysis: Application to Time Series Data. Accepted for publication the International Journal of Intelligent Systems.

↑ INDEX TERMS

Primary Classification:
I. Computing Methodologies
↪ **I.2** ARTIFICIAL INTELLIGENCE

Additional Classification:
I. Computing Methodologies
↪ **I.2** ARTIFICIAL INTELLIGENCE
↪ **I.2.3** Deduction and Theorem Proving
↪ **Subjects:** Uncertainty, "fuzzy," and probabilistic reasoning
↪ **I.6** SIMULATION AND MODELING

J. Computer Applications
↪ **J.1** ADMINISTRATIVE DATA PROCESSING
↪ **Subjects:** Business

General Terms:
Design, Economics, Human Factors

Keywords:
expert systems, fuzzy logic, probability

↑ REVIEW

"Lou Agosta"

The authors present a critique of econometric forecasting methods based on two expert systems, the Forecast Pro and FiNDex. The Forecast Pro selects among a possible set of forecasting methods and produces a forecast. FiNDex presents a wider selection of possible methods of forecasting, but does not make the forecast itself. These systems are used more as a springboard for discussion than as the focus of the paper. An interesting spin on the discussion is provided by FiNDex's use of fuzzy logic and reasoning to determine what forecasting method would be the most suitable for the user. Although no definition of fuzzy reasoning is to be found in the paper—a statement of assumptions might have been useful—the general idea is that probabilistic methods, pattern matching, and partial satisfaction of rules can be used to simulate the thinking of actual human experts. And that, of course, is the point. An expert forecasting system by itself is hopelessly blind. The number of variables of real markets is so vast that no system can accurately capture them all. The most interesting point of this paper, to me, is the way the authors show that econometric models are inevitably caught between the proverbial rock and a hard place. If the observations are not homogeneous—uniform as to place, time, and so on—then a "statistical artifact" can result. On the other hand, if the observations are not sufficiently various in places, times, and so on, then the statistical "law of large numbers" is violated. The way out is to combine statistical economic methods with expert human reasoning and understanding of the business and economic environment. The authors regard what human experts do as implicitly deploying fuzzy reasoning. This approach is also sometimes called "add factoring" (p. 516). This analysis leads them to propose to build an artificial intelligence component to supplement econometric models. Such a component would be based on fuzzy production rules derived from the knowledge of the best experts in the field and be able to "perform fuzzy pattern matching of qualitative statements and...numerical vectors" (p. 515). This paper presents a modest academic contribution, written in a correct but dry style, which will appeal to those interested in the computer simulation of economic factors. The proposal has merit and deserves further study. *Online Computing Reviews Service*

Collaborative Colleagues:

P. Hurtado: M. Schneider, E. Shnaider

M. Schneider: Ladjel Bellatreche, G. Ben Assayag, Michael Berger, G. Chew, M. Craig, B. Cubaleska, J. D'souza, B. Descouts, L. Fausett, M. Friedman, K. Geiger, Birgit Geppert, J. Gierak, J. Guttmann, M. Hauswirth, Hubertus Hohl, P. Hurtado, M. Inui, A. Jarczyk, M. Jazayeri, A. Kandel, Kamalakar Karlapalem, A. Kuehlmeyer, G. Langholz, H. Lim, D. Mailly, J. Y. Marzin, D. Maughan, Mukesh K. Mohania, B. Otto, Frank Rößler, S. Reisch, M. Schertler, E. Shnaider, W. Shoaff, T. Y. Slonim, J. Timmer, C. Trepied, J. Turner, Gerd Völksen, C. Vieu, Utz Wever, Mark W. Wheeler, O. Yaniv, Qinghua Zheng

E. Shnaider: G. Chew, P. Hurtado, A. Kandel, M. Schneider

Peer to Peer - Readers of this Article have also read:

- Data structures for quadtree approximation and compression **Communications of the ACM** 28, 9
  Hanan Samet

- A hierarchical single-key-lock access control using the Chinese remainder theorem **Proceedings of the 1992 ACM/SIGAPP Symposium on Applied computing**
  Kim S. Lee , Huizhu Lu , D. D. Fisher

- The GemStone object database management system **Communications of the ACM** 34, 10
  Paul Butterworth , Allen Otis , Jacob Stein

- Putting innovation to work: adoption strategies for multimedia communication systems **Communications of the ACM** 34, 12
  Ellen Francik , Susan Ehrlich Rudman , Donna Cooper , Stephen Levine

- An intelligent component database for behavioral synthesis **Proceedings of the 27th ACM/IEEE conference on Design automation**
  Gwo-Dong Chen , Daniel D. Gajski

United States Patent 7020617

Strategic planning and optimization system

US Patent Issued on March 28, 2006

Inventor(s)

Kenneth J. Ouimet

Assignee

Khimetrics, Inc.

Application

No. 10844922 filed on 2004-05-12

Current US Class

705/7 , 705/5 , 705/6

Examiners

Primary: Romain Jeanty

Attorney, Agent or Firm

Gresham; Lowell W., Meschkow; Jordan M., Meschkow & Gresham, P.L.C.

US Patent References

5377095
5442730
5521814
5630070
5655118
5754857
5767848
5946662
5950170
5963911
6115691

Foreign Patent References

Abstract

A computer-based method for characterizing relationships between a primary goal and an auxiliary goal in an enterprise planning model includes representing the primary goal by a primary objective function, the primary objective function being dependent upon a set of operational variables. The objective function is resolved to yield a plurality of sets of operational decisions. A plurality of auxiliary goal values associated with a plurality of primary goal values in response to said plurality of sets of operational decisions is presented in a data structure. The computer-based method allows the analysis of the costs and benefits of the auxiliary goal imposed upon the primary goal.

Other References

0 639 815	EP	Feb., 1995
0 356 191	EP	Feb., 1990
WO 9526007	WO	19950900

Gross & Talavage, "A Multiple-Objective Planning Methodology for Information Service Managers," Purdue 1979.
Siddarth et al "Pricing a bundle of products or services: the case of nonprofits"; Feb. 1996; Journal of Marketing Research, V33, n. 1, p86(8); Dialog file 75, Accession No. 18122138.
Dauer & Krueger, "A Multiobjective Optimization Model for Water Resources Planning", Appl. Math. Modeling, 1980, vol. 4, Jun., Pahes 171-175.
Venkataraman & Nathan "Master Production Scheduling for a Process Industry Environment: A Case Study," Bell sand Howard, copyrighted 2000.
"Promoman," Promotion Management Syatem, Nielson Marketing Research 1992.
Bolton "The Robustness of Retail-Level Price Elasticity Estimates," Journal of Retailing, vol. 65, No. 2, Summer 1989.
Cox, et al. "Competing on Price: The role of Retail Price Advertisements in Shaping Store-Price Image," Journal of Retailing, vol. 66, No. 4, Winter 1990.
Allenby, et al. "Reassuring Brand Loyalty, Price Sensitivity and Merchandising Effects on Consumer Branch Choice," Journal of Business & Economic Statistics vol. 13, No. 3, Jul. 1995.
Schindler, et al. "Increased Consumer Sales Response Through Use of 99-Ending Prices," Journal of Retailing, vol. 72, No. 2, pp. 187-1999.

United States Patent 6078893

Method for stabilized tuning of demand models

US Patent Issued on June 20, 2000

Inventor(s)

Kenneth J. Ouimet
Charu V. Chaubal

Assignee

Khimetrics, Inc.

Application

No. 83647 filed on 1998-05-21

Current US Class

705/10 , 705/1 , 705/7

Field of Search

235/381 , 705/1 , 705/10 , 705/14 , 705/7

Examiners

Primary: Tod R Swann
Assistant: M Irshadullah

Attorney, Agent or Firm

Graham & James LLP

US Patent References

5377095
5401946
5687322
5765143
6009407

Abstract

A method for tuning a demand model in manner that is stable with respect to fluctuations in the sales history used for the tuning is provided. A market model is selected, which predicts how a subset of the parameters in the demand model depends upon information external to the sales history; this model may itself have a number of parameters. An effective figure-of-merit function is defined, consisting of a standard figure-of-merit function based upon the demand model and the sales history, plus a function that attains a minimum value when the parameters of the demand model are closest to the predictions of the market model. This effective figure-of-merit function is minimized with respect to the demand model and market model parameters. The resulting demand model parameters conform to the portions of the sales history data that show a strong trend, and conform

to the external market information when the corresponding portions of the sales history data show noise.

Other References

"Promoman", Promotion Management System, Nielsen Marketing Research, 1992.
"The Robustness Of Retail-Level Price Elasticity Estimates" By Ruth N. Bolton, Journal of Retailing, vol. 65, No. 2, Summer 1989.
"Competing On Price: The Role Of Retail Price Advertisements In Shaping Store-Price Image" By Cox et al., Journal of Retailing, vol. 66, No. 4, Winter 1990.
"Reassessing Brand Loyalty, Price Sensitivity, And Merchandising Effects On Consumer Branch Choice" By Allenby et al., Journal of Business & Economic Statistics, Jul. 1955, vol. 13, No. 3.
"Increased Consumer Sales Response Though Use Of 99-Ending Prices" By Schindler et al., Journal of Retailing, vol. 72(2), pp. 187-199.
BioComp Systems Inc announces enterprise modeling server, compatible with Microsoft Windows 95 ans NT, New Intelligent software creates accurate forecasting models to increase effectiveness of the busines, sales and manufacturing process. Business Wire p0, Aug. 1, 1996.
Using Marketi Models To Forecast Demand For Ethical Pharmaceuticals. By Michael Latta, The Journal Of Business Forecasting, Spring 1998, Aug. 1, 1996.

LINKED CITATIONS

You have printed the following article:

The Econometrics of Ultra-High-Frequency Data
Robert F. Engle
Econometrica, Vol. 68, No. 1. (Jan., 2000), pp. 1-22.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28200001%2968%3A1%3C1%3ATEOUD%3E2.0.CO%3B2-R

References

A Theory of Intraday Patterns: Volume and Price Variability
Anat R. Admati; Paul Pfleiderer
The Review of Financial Studies, Vol. 1, No. 1. (Spring, 1988), pp. 3-40.
Stable URL:
http://links.jstor.org/sici?sici=0893-9454%28198821%291%3A1%3C3%3AATOIPV%3E2.0.CO%3B2-D

A Subordinated Stochastic Process Model with Finite Variance for Speculative Prices
Peter K. Clark
Econometrica, Vol. 41, No. 1. (Jan., 1973), pp. 135-155.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28197301%2941%3A1%3C135%3AASSPMW%3E2.0.CO%3B2-G

Time and the Process of Security Price Adjustment
David Easley; Maureen O'Hara
The Journal of Finance, Vol. 47, No. 2. (Jun., 1992), pp. 577-605.
Stable URL:
http://links.jstor.org/sici?sici=0022-1082%28199206%2947%3A2%3C577%3ATATPOS%3E2.0.CO%3B2-D

Exogeneity
Robert F. Engle; David F. Hendry; Jean-Francois Richard
Econometrica, Vol. 51, No. 2. (Mar., 1983), pp. 277-304.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28198303%2951%3A2%3C277%3AE%3E2.0.CO%3B2-W

LINKED CITATIONS

Autoregressive Conditional Duration: A New Model for Irregularly Spaced Transaction Data
Robert F. Engle; Jeffrey R. Russell
Econometrica, Vol. 66, No. 5. (Sep., 1998), pp. 1127-1162.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28199809%2966%3A5%3C1127%3AACDANM%3E2.0.CO%3B2-O

Stock Prices and Volume
A. Ronald Gallant; Peter E. Rossi; George Tauchen
The Review of Financial Studies, Vol. 5, No. 2. (1992), pp. 199-242.
Stable URL:
http://links.jstor.org/sici?sici=0893-9454%281992%295%3A2%3C199%3ASPAV%3E2.0.CO%3B2-Y

Pseudo Maximum Likelihood Methods: Theory
C. Gourieroux; A. Monfort; A. Trognon
Econometrica, Vol. 52, No. 3. (May, 1984), pp. 681-700.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28198405%2952%3A3%3C681%3APMLMT%3E2.0.CO%3B2-N

Measuring the Information Content of Stock Trades
Joel Hasbrouck
The Journal of Finance, Vol. 46, No. 1. (Mar., 1991), pp. 179-207.
Stable URL:
http://links.jstor.org/sici?sici=0022-1082%28199103%2946%3A1%3C179%3AMTICOS%3E2.0.CO%3B2-T

Bayesian Analysis of Stochastic Volatility Models
Eric Jacquier; Nicholas G. Polson; Peter E. Rossi
Journal of Business & Economic Statistics, Vol. 12, No. 4. (Oct., 1994), pp. 371-389.
Stable URL:
http://links.jstor.org/sici?sici=0735-0015%28199410%2912%3A4%3C371%3ABAOSVM%3E2.0.CO%3B2-M

The Relation Between Price Changes and Trading Volume: A Survey
Jonathan M. Karpoff
The Journal of Financial and Quantitative Analysis, Vol. 22, No. 1. (Mar., 1987), pp. 109-126.
Stable URL:
http://links.jstor.org/sici?sici=0022-1090%28198703%2922%3A1%3C109%3ATRBPCA%3E2.0.CO%3B2-1

LINKED CITATIONS

Heteroskedasticity in Stock Return Data: Volume versus GARCH Effects
Christopher G. Lamoureux; William D. Lastrapes
The Journal of Finance, Vol. 45, No. 1. (Mar., 1990), pp. 221-229.
Stable URL:
http://links.jstor.org/sici?sici=0022-1082%28199003%2945%3A1%3C221%3AHISRDV%3E2.0.CO%3B2-3

An Exploratory Quarterly Econometric Model of Effective Demand in the Postwar U. S. Economy
Ta-Chung Liu
Econometrica, Vol. 31, No. 3. (Jul., 1963), pp. 301-348.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28196307%2931%3A3%3C301%3AAEQEMO%3E2.0.CO%3B2-1

A Monthly Recursive Econometric Model of United States: A Test of Feasibility
Ta-Chung Liu
The Review of Economics and Statistics, Vol. 51, No. 1. (Feb., 1969), pp. 1-13.
Stable URL:
http://links.jstor.org/sici?sici=0034-6535%28196902%2951%3A1%3C1%3AAMREMO%3E2.0.CO%3B2-N

The Price Variability-Volume Relationship on Speculative Markets
George E. Tauchen; Mark Pitts
Econometrica, Vol. 51, No. 2. (Mar., 1983), pp. 485-505.
Stable URL:
http://links.jstor.org/sici?sici=0012-9682%28198303%2951%3A2%3C485%3ATPVROS%3E2.0.CO%3B2-F

Freeform Search

Database:
US Pre-Grant Publication Full-Text Database
US Patents Full-Text Database
US OCR Full-Text Database
EPO Abstracts Database
JPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Term:

Display: 10 **Documents in Display Format:** - **Starting with Number** 1

Generate: ○ **Hit List** ◉ **Hit Count** ○ **Side by Side** ○ **Image**

Search Clear Interrupt

Search History

DATE: Thursday, July 06, 2006 Printable Copy Create Case

Set Name side by side	**Query**	**Hit Count**	**Set Name** result set
DB=USPT; PLUR=YES; OP=OR			
L11	'6684193'.pn.	1	L11
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L10	L9 and financial with model	69	L10
L9	econometrics	331	L9
DB=USPT; PLUR=YES; OP=OR			
L8	'5950170'.pn.	1	L8
L7	'5963911'.pn.	1	L7
L6	'6115691'.pn.	1	L6
L5	'5377095'.pn.	1	L5
L4	'5377095'.pn.	1	L4
L3	'5442730'.pn.	1	L3
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L2	6078893.pn.	2	L2
L1	7020617.pn.	2	L1

END OF SEARCH HISTORY

The **"AND"** operator is unnecessary -- we include all search terms by default. [details]

Web Results **191** - **200** of about **10,500,000** for **inventory control and price theory**. (**0.30** seconds)

[PDF] Discount Cash-Flow Analysis on **Inventory Control** under Various ...
File Format: PDF/Adobe Acrobat - View as HTML
Inventory, Decision **theory**, Cash discount, Delay payment, Trade credit ... a type of **price** reduction. To motivate faster payment, ...
140.128.118.125/IJOR/vol3no1/ paper-4-IJOR-vol3_1_-Teng.pdf -
Similar pages

Statistical modeling of the container **inventory control** in a ...
The study of the reusable container **inventory control** in a distribution network is ... Based on the optimization **theory**, simulation executions were such ...
digitalcommons.fau.edu/dissertations/AAI9809295/ - 8k -
Cached - Similar pages

The Five Parts of a Cost Accounting System
These **inventory** valuation methods are very important because they **control** the manner in which net income is determined. As we shall see is this chapter and ...
www.maaw.info/5partsofcostsystem.htm - 30k - Cached - Similar pages

Dynamic pricing of **inventory** with cancellation demand
Inventory control and price theory. Mngt Sci 2: 61-68. 13 Petruzzi NC and Dada M (1999). Pricing and the newsvendor problem: a review with extension. ...
www.palgrave-journals.com/ jors/journal/v54/n10/full/2601619a.html -
Similar pages

HP Labs : People Pages
Beyer, D., and Sethi, SP, "Average-Cost Optimality in **Inventory** Models with Markovian Demands and Lost Sales," in Analysis, **Control** and Optimization of ...
www.hpl.hp.com/personal/Dirk_Beyer/index.html - Similar pages

Industrial Engineering Technology
Cost **Control** Methods studies cost estimating techniques, practical application of production cost **theory**, **control** of material and labor costs, ...
www.stanton.dtcc.edu/stanton/iet/ - 7k - Cached - Similar pages

Profit Optim;Revenue Management:Yield Management, **inventory** ...
... Optimize profits through blend of **inventory** management and invenotry **control**, ...
Revenue Management **Theory**, Implementation and Pricing (157 pages)Steve ...
www.profitoptim.com/Articles___Briefings/ body_articles___briefings.html - 19k -
Cached - Similar pages

SD : Environment : Special: Remote Sensing for Decision-makers ...
Inventory and monitoring of shrimp farms by radar satellite data ... Assessment of priority

areas for trypanosomiasis **control** actions by satellite data and ...
www.fao.org/sd/Eldirect/Elre0084.htm - 15k - Cached - Similar pages

Cost and Reliability Approaches in **Inventory Theory**
A stochastic model from **inventory theory** accounting for merchandize return and ... The optimal and asymptotic optimal **control** strategies are constructed, ...
portal.acm.org/citation.cfm?id=1064946.1064954&coll=GUIDE&dl=GUIDE&CFID=72202720&CFTOKEN=... - Similar pages

Opamp Title-Keyword, Author & ISBN Search Results
Selecting the Most Appropriate **Inventory Control** Policy. Appendices. References. Index. Wiley, H, ISBN: 0471253383, PGS: N/A, List: 110.00 YOUR **PRICE**: ...
opamp.com/cf/keyword.cfm?SRow=1&Keywords=**inventory** - 75k - Cached - Similar pages

◀ Goooooooooooooooooooogle ▶
Result Page: **Previous** 10 11 12 13 14 15 16 17 18 19 **20** 21 22 23 24 25 26 27 28 29 **Next**

inventory control and price theory | Search

Search within results | Language Tools | Search Tips

Google Home - Advertising Programs - Business Solutions - About Google

Electronic Retailing Systems International, Inc. Sponsors In-Store Industry Forum at Food Marketing Institute -FMI-MARKETECHNICS '99 Show.

FREE ARTICLE

Business Wire; 2/26/1999

NORWALK, Conn.--(BUSINESS WIRE)--Feb. 26, 1999--

--Procter & Gamble, Symbol Technologies Inc. and SASI

among key industry presenters--

Electronic Retailing Systems International, Inc. (ERS) (NASDAQ: ERSI) today announced that the company is sponsoring an in-store industry forum at the FMI MARKETECHNICS '99 trade show that opens today, February 26 through February 28, **1999** in New Orleans, LA. At the ERS booth, industry experts will discuss key in-store retail applications such as strategic pricing, planogram compliance, in-aisle productivity and relationship marketing and how Electronic Shelf Labels (ESLs) can bring increased value to each of these applications. The companies participating in this industry forum include Procter & Gamble, Symbol Technologies Inc., Stores Automated Systems, Inc. (SASI), S4, **KhiMetrics**, MGV and Comtec.

"The number one problem facing retailers today is labor - labor availability and cost - which prevents retailers from executing their programs at the store level. Although retailers have increased their investment of in-store technology over the last few years, the missing element has been the ability to execute at the shelf edge," said Bruce F. Failing, Jr., Chief Executive Officer for ERS. "We are providing this forum to help increase retailers' awareness of the value ESLs bring to their operations, especially in tight labor situations."

Visitors to the ERS booth will be able to learn from leading technology and marketing company partners how to maximize the value of existing in-store applications with ESLs. Speakers will discuss how these in-store applications in combination with ESLs could generate increased profits for retailers in excess of 1% of sales, which could mean potential benefits of $95,000 to $295,000 per store for most retailers on an annual basis.

For more information about the ERS-sponsored industry forum at Booth No. 1319 at MARKETECHNICS '99, please call ERS at 1.888.ERS.INTL. MARKETECHNICS '99 is an annual trade show sponsored by the Food Marketing Institute (FMI). This year's MARKETECHNICS '99 is being held in New Orleans, LA from February 26 - 28, 1999.

ERS is a leading developer and supplier of electronic shelf labeling systems designed to improve retailer profitability. The ERS ShelfNet(R) system is designed to assist retailers in cost savings and pricing accuracy by using a wireless network to link a store's central computer both to its check-out scanner and to the ESLs that display pricing information at the shelf edge. With ShelfNet, this pricing information is updated automatically on the ESLs when prices in the point-of-sale (POS) scanner are changed. This provides price integrity between the shelf edge and the POS scanners. ShelfNet uses spread spectrum RF technology, which is the most widely used method of wireless communication in retail today. In addition, ShelfNet uses a suite of patented software applications designed to communicate merchandising, inventory and other information to and from store personnel in the aisle. These applications are designed to provide value-added benefits to retailers in the areas of shelf-edge merchandising, replenishment control, strategic pricing and shelf set compliance.

This press release contains forward-looking statements that involve risks and uncertainties. ERS' actual results may vary from those anticipated due to a number of factors, including, without limitation, the timely availability and acceptance of new products, the rate of development of the emerging market for electronic shelf label systems, the impact of competitive products and pricing, the management of growth, and other factors set forth in reports and other documents filed by ERS with the Securities and Exchange Commission from time to time.

Search for more information on HighBeam Research for khimetrics <1999:

Results from only the current publication: **Business Wire**

Results from only current source type: **Newspapers**

Results from only the month of this article: **February 1999**

Results from only the **last 30 days**

Results from: **The entire web using HighBeam Web**

Results from: **Reference works from HighBeam Reference**

Results by using our **advanced search**

Statistical modeling of the container inventory control in a distribution netwc

Weiming Feng, *Florida Atlantic University Libraries*

Date: 1997

Abstract

The study of the reusable container inventory control in a distribution network is cri and cost effectiveness of the transportation systems. In order to minimize the total transportation network system, all subsystems of the distribution network have to b a whole system. In this study, we extended the inventory control concept and deve inventory control model for the transportation network. We presented a systematic those subsystems as interrelated systems. Mathematical models were developed f and container inventory control problems first. Then, the statistical modeling metho the effects of the container inventory management policies on the performance of t system. Based on the optimization theory, simulation executions were such arrang optimality. This makes it possible to optimize the variables of inventory control und policies without solving mathematical models. A Simulation Code Generator (SCG' a general container inventory control system.

Subject Area
ENGINEERING, INDUSTRIAL (0546); ENGINEERING, MECHANICAL (0548)

NOTE TO USERS

24 Page Preview

PUBLICATION NUMBER	AAT 9809295
TITLE	Statistical modeling of the container inventory control in a distribution network
AUTHOR	Feng, Weiming
DEGREE	PhD
SCHOOL	FLORIDA ATLANTIC UNIVERSITY
DATE	1997
DIGITAL FORMATS	4.05Mb image-only PDF

STATISTICAL MODELING OF
THE CONTAINER INVENTORY CONTROL
IN A DISTRIBUTION NETWORK

By

Weiming Feng

A Dissertation Submitted to the Faculty of the College

Of Engineering in partial Fulfillment of the

Requirements for the Degree of Ph.D.

Florida Atlantic University

Boca Raton, Florida

December 1997

UMI Number: 9809295

STATISTICAL MODELING OF THE CONTAINER INVENTORY CONTROL IN A DISTRIBUTION NETWORK

by
Weiming Feng

This dissertation was prepared under the direction of the candidate's dissertation advisor. Dr. Chingping Han, Associate Professor, Department of Mechanical Engineering and has been approved by the members of his supervisory committee. It was submitted to the faculty of the College of Engineering and was accepted in partial fulfillment of the requirements for the degree of Ph.D.

SUPERVISORY COMMITTEE:

Chingping Han
Director of Dissertation

Chairperson
Department of Mechanical Engineering

Dean, College of Engineering

Dean of Graduate Studies and Research

10-28-97
Date

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my dissertation advisor, Dr. Chingping Han, for his constant support and valuable guidance throughout my course study and dissertation work. I would like to thank the members of my dissertation committee, Dr. Kader A. Mazouz, Dr. Guoqiang Cai and Dr. Jie Wu, for carefully reviewing this dissertation and providing helpful comments and suggestions which have made it better. I would like to thank Material Handling Research Center, Ford Motor Company, Dole Food Company, Inc. and Florida Power & Light Company, for their supporting the projects that provide valuable data for my dissertation.

Finally, I would like to dedicate this dissertation to my wife Shirley and my daughter Jenny.

ABSTRACT

Author: Weimng Feng

Title: Statistical Modeling of the Container Inventory Control in a Distribution Network

Institution: Florida Atlantic University

Degree: Doctor of Philosophy in Mechanical Engineering

Year: 1997

The study of the reusable container inventory control in a distribution network is crucial to the efficiency and cost effectiveness of the transportation systems. In order to minimize the total operation cost of such a transportation network system, all subsystems of the distribution network have to be optimized together as a whole system. In this study, we extended the inventory control concept and developed a multiple-inventory control model for the transportation network. We presented a systematic approach to address all those subsystems as interrelated systems. Mathematical models were developed for the transportation and container inventory control problems first. Then, the statistical modeling method was used to analyze the effects of the container inventory management policies on the performance of the transportation system. Based on the optimization theory, simulation executions were such arranged to lead to the globe optimality. This makes it possible to optimize the variables of inventory control under different control policies without solving mathematical models. A Simulation Code Generator (SCG) was also developed for a general container inventory control system.

LIST OF CONTENTS

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 Motivation

In most material transportation processes, containers are necessary to facilitate transportation, and protect the material being transferred from possible damage. The generic definition of "container" used here is anything that can hold a volume of material in transportation. A container could be a cargo vehicle such as, a trailer, or a transport vessel such as a box, a case, a pallet, etc. In order to minimize the total cost of a transportation system, there should be enough containers available at a supply site in addition to the availability of material or goods needed. As shown in Figure 1.1, a successful transportation between two sites requires not only enough material in demand, but also enough available containers at the supply site. Container inventory at supply sites is important for successful material transportation. The shortages of containers at a supply site will delay the transportation of material.

Containers protect materials being transferred and make them easier to handle in the transportation process. Containers are an integral part of the total transportation cost. Less expensive materials such as paper, plastic bags or carton boxes are used as containers to reduce cost. These containers are disposed or recycled after transportation. With the increase of the freight volume and the transportation distance, the requirement

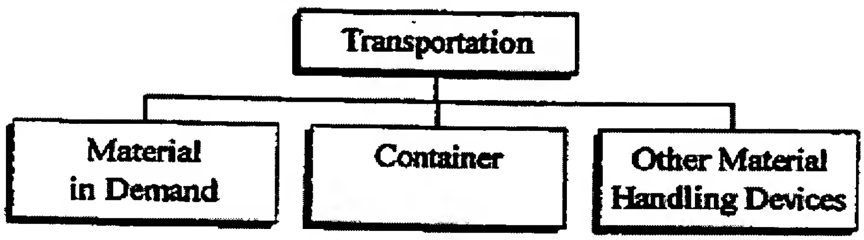


Figure 1.1 Elements of a Transportation System

for better quality containers increases rapidly. The cost of containers becomes a significant part of the total transportation cost if we still dispose of them. Serious environmental problems will also result if we do not pay attention to their container disposal, which costs extra money and labor. In most cases, these quality containers are not damaged after transportation and can still be used for future purpose . Employing reusable containers is an economical method to reduce the container cost. Returning containers to inventory after transportation for future reuse will dramatically reduce the container cost from the overall cost of the transportation system. It also reduces the pressure of container disposal problems.

When reusable containers are used in a transportation system, certain amounts of container inventories are necessary at the supply site. The container inventory will be a production-inventory system, as shown in Figure 1.2. The demand will reduce the inventory level while the return of container will increase the inventory level; hence, both will change the container inventory level. After a period of time, the container inventory level of a site will be in one of three cases: unchanged, increased or decreased. The state depends on the average demand rate and return rate during that period of time.

In numerous cases, there are many supply sites and destination sites that are connected by routes forming a distribution network. Generally, a transportation network contains many sites where each site can be a supply site and/or a destination site.

When reusable containers are used in distribution network, the containers are required to flow through road networks carrying the materials in demand. In such a distribution network, there are many individual container inventories located on every

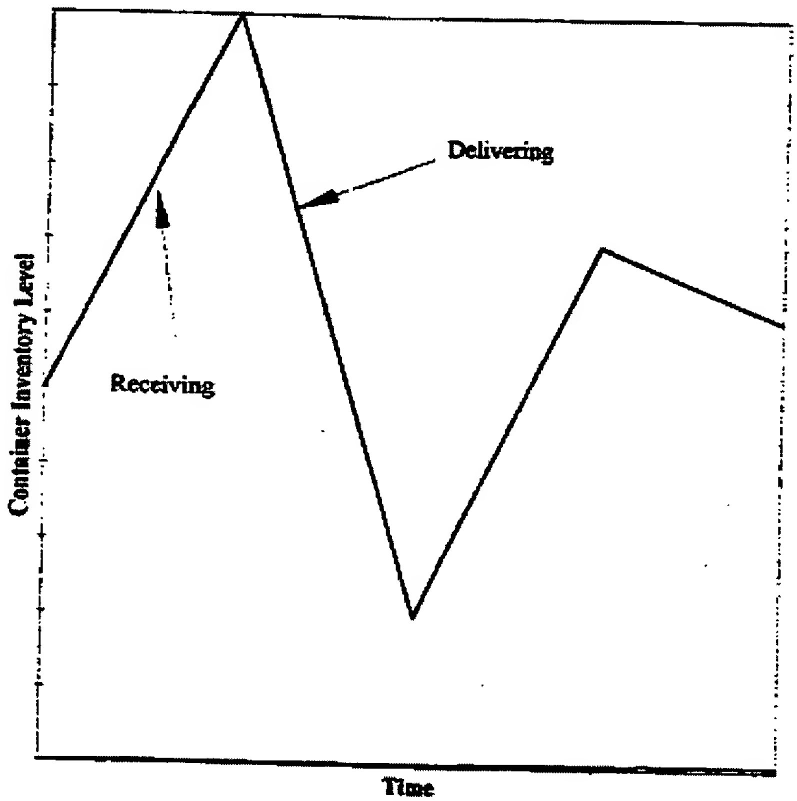


Figure 1.2 Inventory Pattern for Reusable Container

site of the network. After transportation, it is not necessary to return those containers to the supply site. The containers can be sent directly to container inventories of the destination sites for future use.

A container inventory transportation network can be classified as either a close-loop system or an open-loop system. The closed-loop system is a network in which all the sites are both container supplier and demander. The open-loop system is a network in which at lease one of the sites is only a supplier or demander. A transportation network can also be classified as a balanced or unbalanced system. In a balanced system, the container inventory at each site is balanced, meaning that the number of containers shipped out by demand of a particular site is equal to the number of containers returned after shipment. The inventory level remains unchanged.

An unbalanced system is unable to keep its balance. The inventory at some sites will keep increase or decrease after a period of time. There are two reasons that cause a system to be unbalanced. One is the number of containers broken during usage. We have to add new containers into the system to make it balanced. The other reason is that the demand shipment and the return of container are not equal for some sites. After a period of time, these sites will have extra containers or will have a container shortage. If the system is a closed-loop system, the total containers in the system will still be kept the same. In this kind of unbalanced system, we have to ship containers to the sites where there are container shortages from the sites with extra containers. The redistribution of the containers within such an unbalanced system to make the containers available at every site

site is essential to the performance of the whole system. The closed-loop unbalanced transportation systems are the subject of this study.

When materials are transported between sites, the container inventory levels at each site will change. The container inventory control in a large transportation system is a type of network-location-allocation problem [Baza77]. The demand pattern of the containers is similar to the demand pattern of the materials. As any of other inventory items, container inventory also has its carrying cost, shortage cost and replenishment cost. The container's carrying cost, shortage cost and replenishment cost should be included into the total cost.

Obviously, if there are not enough containers in the network, it will cause transportation delays. However, using more containers than necessary results in higher carrying costs. One of the fundamental problems of distribution network optimization is to know how many containers should be maintained in a particular system to make it efficient and economic. On the other hand, although there are sufficient containers in the system, if they are not located at appropriate sites, they are still unavailable to some other sites at the moment when they are required. This will also cause transportation delays or give up optimal routes. An efficient way to reduce container inventory levels is to redistribute the empty containers to appropriate sites at the appropriate time. The more frequently we redistribute empty containers, the lower the container inventory level can be expected in the systems. However, the cost for container transportation increases at the same time.

Additional focus is on when and how to redistribute empty containers in the system to reach the lowest total cost. How to satisfy the requirement of transportation and maintain minimum amount of container inventory are common issues in many areas.

To minimize the total cost, a new issue arises. This issue deals with reusable Container Inventory contRol in a distriBution netwOrk (CIRBO). Compared with the importance of this problem in many areas, the research in this issue is still under-development.

1.2 Background

Reusable container inventory control in a distribution network presents the combination of the characteristics found in the transportation network system and the inventory control itself. Inventory control employs reusable containers in a road network. It deals with not only the inventory but also the transportation system management. Actually, at least three issues effected the total cost considered here:

1. Optimal supply site selection for the commodity in demand,
2. Control policy selection for the container inventory system, and
3. Optimal the empty container redistribution methods.

In most cases, the demand and transportation time are probabilistic. Issue 1 and issue 3 are transportation problems with probabilistic demands. Issue 2 is a special inventory control problem. If the system has infinite containers or if the containers are not used in the material transportation, this system becomes a pure transportation problem.

On the other hand, if the optimal routes have been selected for commodity shipment, the system degenerates into multiple inventory control and container redistribution in a distribution network. Then the system performance is totally dependent on the inventory policy or the container management. Analyzing such a system will clearly demonstrate how container management affects the performance of a transportation system.

If the transportation aspects of the CIRBO are omitted, the CIRBO becomes a special inventory control problem. It has many differences from common inventory control problems. Usually, inventory control only deals with one location inventory. With appropriate assumptions, the inventory control theory resemble the one that provide analysis methods and generates optimal solutions for the deterministic and some special probabilistic systems. The inventory control policy highlights "when" and "how much" replenishment should be put into the inventory system.

In CIRBO problems, the container inventories are located at every site of a road network. The container inventory at each site generates demand and gets replenishment at the same time. These inventories dependent on each other. The transportation in the network is the link between inventories. Containers flow with the demand of materials through out the network. Under ideal conditions, containers will not be damaged and remain in the system. No additional containers should be required. Therefore the system forms a closed loop system. In this situation, the terminology used in traditional inventory control, such as demand, shortage, replenishment, lead-time, costs, etc. must be redefined. In addition, the relationship among inventories need to be defined as well.

In real situations, most of the CIRBO systems are probabilistic systems. That means the demands for each site are statistical. We do need mathematical models for different inventory control policies to study the effects of container inventory levels on the transportation system. However, it is unrealistic to find a mathematical solution for such a complicated problem with statistical demands. The most adopted method to solve this problem is to use statistical simulation modeling. Simulation modeling uses the computer generated random distribution variables or real data to represent and simulate the performance of the real world.

Simulation is not an direct tool for optimization. We can not use simulation language to calculate optimal solution. However, it can model different alternatives and quickly answer "what-if" questions. User can compare and make a judgment according to the results of simulation. We can arrange the simulation runs in such way that all the controllable variables are fixed except one we want to optimize. The results of simulation runs will tell the effect of this variable on the performance of the systems.

Statistical modeling and analysis have become an important method to analyzing complex systems. In recent years, more and more people are using simulation as a problem-solving tool. This increase has led to the improvement of simulation languages and the model developing environment. While the number of simulation languages continue to increase, many languages have been rewritten to be more powerful and more user-friendly. SIMAN©, the simulation language used in this study, is a popular simulation language which is powerful and flexible for modeling.

Simulation study requires specially trained people to develop the simulation model, define the input data and interpret output data. It is a time-consuming work especially for a complex system. This requirement limits the simulation applications for many situations. Many researchers have concentrated on developing simulation generators that can "automatically" generate simulation model.

1. 3 Objective

The framework of this study is to develop a simulation modeling procedure and address common problems of CIRBO systems. First, the CIRBO problem is defined and different inventory policies are analyzed and described by mathematical models. Then. simulation models for CIRBO are created using SIMAN© simulation language. A simulation code generator (SCG) system is then developed using SIMAN© as a target program to generate a CIRBO model systematically based on a set of input conditions. The SCG itself is implemented by the C++ language in Object-Oriented Window environment. The resultant framework is reusable, extendible and user-friendly.

Using the dialogue method with user input or data selection, the SCG system creates a simulation model. In real data input format, the user can input actual data from Lotus 123 files to simulate various conditions. The performances of the system are presented in an easy to understand format. Displaying performance comparisons resulting from different conditions and/or different inventory policies, the user can then decide a management approach.

1.4 Dissertation Outline

In Chapter 2, a literature review is carried out. It discusses recent development in inventory control, transportation, and computer simulation. Mathematical models of systems are discussed in Chapter 3. An approach using simulation and optimization to solve above problem is proposed in Chapter 4. In Chapter 5, we talk about the possibility of using simulation code generator. Two case studies for an auto-maker and a fresh fruit company are detailed in Chapter 6. A conclusion and directions for future study are discussed in Chapter 7. Appendixes A, B and C contain the computer codes of SCG. output SIMAN© codes of the case studies respectively.

The **"AND"** operator is unnecessary -- we include all search terms by default. [details]

Web Results **1** - **10** of about **10,500,000** for **inventory control and price theory**. (**0.15** seconds)

Book results for **inventory control and price theory**

Production and **Inventory Control** ... - by James H. Greene - 1200 pages
Theory And Practice of Revenue Management - by Kalyan T Talluri, Garrett J Van Ryzin - 714 pages
Cost-Benefit Analysis and the **Theory** of ... - by K K Dompere - 400 pages

Books - Management - Manufacturing, **Inventory Control**, ERP, SCM ...
inventory control book by Gene Woolsey and Ruth Maurer ... Schragenheim will take you through a management approach called the **Theory** of Constraints (TOC). ...
www.atlantabookstore.com/management.html - 22k - Cached - Similar pages

IBM Research | IBM Research | The IBM Research*NYU*Columbia **Theory** ...
Provably Near-Optimal Policies for Hard Stochastic **Inventory Control** Policies. Dr. Retsef Levi IBM TJ Watson Research center. Stochastic **inventory theory** ...
domino.watson.ibm.com/comm/research.nsf/ pages/r.algorithms.**theory**day2005.html - 26k - Cached - Similar pages

The IBM Research/NYU/Columbia **Theory** Day - NYU Computer Science ...
Provably Near-Optimal Policies for Hard Stochastic **Inventory Control** Policies. Dr. Retsef Levi IBM TJ Watson Research Center. Stochastic **inventory theory** ...
www.cs.nyu.edu/web/Calendar/ colloquium/fall05/nov18.html - 14k - Cached - Similar pages

The IBM*NYU*Columbia **Theory** Day
Provably Near-Optimal Policies for Hard Stochastic **Inventory Control** Policies Dr. Retsef Levy (IBM Research) Stochastic **inventory theory** provides ...
www.cs.columbia.edu/**theory**/f05.htm - 11k - Cached - Similar pages

INFORMS @ VT - Combined Pricing and Production Decisions in ...
Existence of a clearance market increases the profit, **price** and the ... His research interests fall in the revenue management, **inventory control** and pricing ...
www.informs.org.vt.edu/index.php?option=com_ content&task=view&id=23&Itemid=41 - 28k - Cached - Similar pages

Stock Options - Stock Options Trading, Trading Stock Options ...
... Insurance Companiesstock **Inventory Control** - **Inventory Control**online ... Bank One Stock Options Business Options Stock **Price Theory** Stock Options Bad ...

s168897611.onlinehome.us/directory/?sxq46998.html - Similar pages

MIT OpenCourseWare | Sloan School of Management | 15.764 The ...
16, Multi-Level Production/**Inventory Control** Systems, **Theory** and Practice, ... "Managing Customer Relationships Through **Price** and Service Quality. ...
www.ocw.mit.edu/OcwWeb/Sloan-School-of-Management/ 15-764Spring2004/Readings/index.htm - 25k - Cached - Similar pages

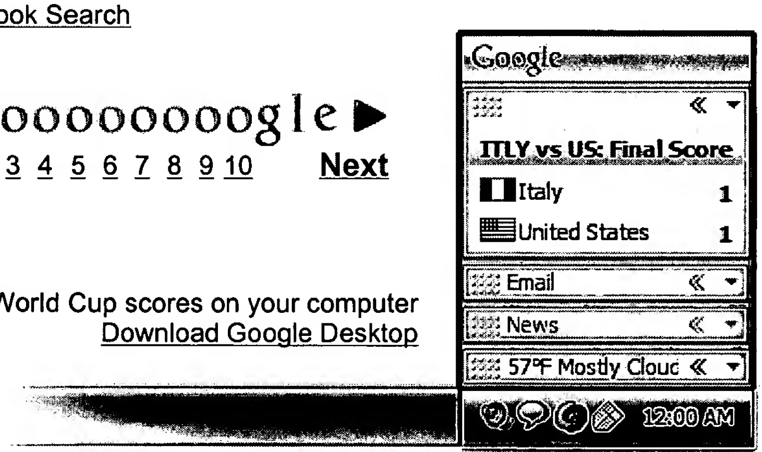
Inventory - Wikipedia, the free encyclopedia
A discussion of **inventory** from standard and **theory** of constraints-based ... less **control** over excess **inventory** and cost efficiencies than their managers. ...
en.wikipedia.org/wiki/Inventory - 33k - Cached - Similar pages

HKUST Institutional Repository: Item 1783.1/1556
Title:, Contributions to lot-sizing and **inventory control theory**. Authors:, Ng, Siu Wa. Issue Date:, 2001. Abstract:, In this thesis, two **inventory control** ...
hdl.handle.net/1783.1/1556 - 12k - Cached - Similar pages

Citations: Stochastic **inventory theory** - Porteus (ResearchIndex)
Stochastic **inventory theory**. In DP Heyman and MJ Sobel, editors, ... 2 Marcel J. Kleijn and Rommert Dekker much attention in **inventory control theory**. ...
citeseer.ifi.unizh.ch/context/35159/0 - 15k - Cached - Similar pages

Try your search again on Google Book Search

Result Page: 1 2 3 4 5 6 7 8 9 10 **Next**



inventory control and price theory Search

Search within results | Language Tools | Search Tips | Dissatisfied? Help us improve

Google Home - Advertising Programs - Business Solutions - About Google

Wagner, H., & Whitin, T. M. (1958b). Dynamic Version of the Economic Lot Size Model. *Management Science, 5*(1), 89-96.

Whitin, T. M. (1955). Inventory Control and Price Theory. *Management Science, 2*(1), 61-68.

Web

Results **101** - **110** of about **1,250** for **khimetrics <1999**. (**0.25** seconds)

[PDF] Revenue Management
File Format: PDF/Adobe Acrobat - View as HTML
Some companies, such as **KhiMetrics**, with their retail revenue management ... September **1999**. To obtain a copy of any of the publications listed above, ...
www.free-conversant.com/mindspill/ 140/enclosure/Retail_Revenue_Management.pdf -
Similar pages

Fish Photo Caption Lorem ipsum dolor sit amet
Faculty Council to the School of Continuing Studies, 1992-**1999** ... **Khimetrics**, Scottsdale, Arizona. Mayor's Jewelers, Miami, Florida. Mervyn's Dallas, Texas ...
faculty.babson.edu/mlevy/Resume.htm - 113k - Cached - Similar pages

Neil Kassal 2114 East Sharon Drive Phoenix, AZ 85022-4622 Home ...
11/2002 – 9/2004 **KhiMetrics** Inc. Scottsdale, AZ Senior AIX and Oracle Administrator for ...
8/**1999** - 5/2000 Federal Reserve Board of Governors Washington, ...
neil.gotdns.org:8000/resumes/neilkassal.txt - 11k - Supplemental Result -
Cached - Similar pages

SAP收购美零售软件公司两月两购并欲死磕甲骨文 ChinaByte内容 天极 ... - [Translate this page]
11 月 22 日 ， SAP 宣布收购美国零售软件公司 **Khimetrics** ... Copyright (C) **1999** - 2005
Chinabyte . com , All Rights Reserved 版权所有天极网络 渝 ICP 证 B2 ...
news.chinabyte.com/162/2206662.shtml?2 - 87k - Supplemental Result -
Cached - Similar pages

aufschlussreich (German to French translation glossary ... - [Translate this page]
... asp ? siteid = 1505 **Khimetrics** - Customer Demand Solutions - Request Information . ...
Copyright © **1999** - 2005 ProZ . com - All rights reserved . ...
www.proz.com/kudoz/915032 - 36k - Supplemental Result - Cached - Similar pages

Oracle investiert in Software-Entwickler | Nachrichten | finanzen ... - [Translate this page]
Dollar für die **KhiMetrics** Inc . beteiligt , einem vier Jahre alten Start - Up ... **1999** - 2006
SmartHouse Media GmbH. Startseite News Aktien Kurslisten ...
shortnews.stern.de/web/news_archive/1/id/209869/ robot/1/x_id/Oracle%20investiert%
20in%20Software-Entwickl... - 59k - Supplemental Result - Cached - Similar pages

SurfWax Archives: Company News and Articles On ShopKo Stores ...
Khimetrics Announces Deal With Lowe's Sep 23, 2004 **Khimetrics** customers include ...
ShopKo has faced tough times since the Pamida acquisition in **1999**. ...
news.surfwax.com/biz/archives/ShopKo_Stores.html - 53k - Supplemental Result -
Cached - Similar pages

[PDF] Executing the Demand Chain Page 1 Russell Keziere total word count ...
File Format: PDF/Adobe Acrobat - View as HTML
More broadly, the **1999** Global Commerce Initiative ... JDA, Marketmax, Retek, DemandTech, **KhiMetrics**, Mercari, Spotlight and ProfitLogic ...
www.partneralliances.com/Executing_the_Demand_Chain.pdf - Supplemental Result -
Similar pages

[PDF] eCommerce Competition I: The Perils of New Commercial Technologies ...
File Format: PDF/Adobe Acrobat - View as HTML
for Advanced Commerce, **1999**. Shopbot Economics. NOTES & QUESTIONS ...
www.**khimetrics**.com. 9. www.demandtec.com. 10. www.manugistics.com ...
www.law.upenn.edu/fac/pwagner/law619/
f2001/week14/pageprints/competition1_new_tech.pdf - Supplemental Result - Similar pages

InformationWeek | E-Commerce | Grocers Count On IT To Keep Cash ...
In mid-**1999**, Webvan signed a $1 billion contract with Bechtel Corp. to build ... "One of the problems of **Khimetrics** and DemandTec is they have great math, ...
www.informationweek.com/news/ showArticle.jhtml?articleID=6508156 - 146k -
Cached - Similar pages

◀ Gooooooooooooooooooooogle ▶
Result Page: **Previous** 1 2 3 4 5 6 7 8 9 10 **11** 12 13 14 15 16 17 18 19 20 **Next**

khimetrics <1999 Search

Search within results | Language Tools | Search Tips

Google Home - Advertising Programs - Business Solutions - About Google

Inventory

From Wikipedia, the free encyclopedia

In business management, **inventory** consists of a list of goods and materials held available in stock.

An *inventory* can also mean a self-examination, a **moral inventory**.

In computing, **inventories** can comprise physical and non-physical components.

Contents

Business inventory

Each country has its own rules about accounting for inventory; this article concentrates on economic theory, United States financial accounting rules, and Eliyahu M. Goldratt's throughput accounting. National boundaries do not limit economics, and throughput accounting functions independently of national regulations because it affects public financial reports only indirectly.

Organizations in the U.S. define **inventory** to suit their needs within Generally Accepted Accounting Practices (GAAP), the rules defined by the Financial Accounting Standards Board (FASB) (and others) and enforced by the U.S. Securities and Exchange Commission (SEC) and other federal and state agencies. Inventory management affects organizations' internal operations through their cost accounting methods. Identification of goods using *Stock Keeping Units* (SKUs) assists in managing inventory.

While financial accounting uses standards that allow the public to compare firms, cost accounting functions internally to an organization and with much greater flexibility. A discussion of inventory from standard and theory of constraints-based (throughput) cost accounting perspective follows some examples and a discussion of inventory from a financial accounting perspective.

Inventory examples

While accountants often discuss inventory in terms of goods for sale, organizations - manufacturers, service-providers and not-for-profits - also have inventories (fixtures, furniture, supplies, ...) that they do not intend to sell. Manufacturers', distributors', and wholesalers' inventory tends to cluster in warehouses. Retailers' inventory may exist in a warehouse or in a shop or store accessible to customers. Inventories not intended for sale to customers or to clients may be held in any premises an organization uses. Stock is simply cash in disguise. If

stocks are uncontrolled, you are encouraging theft moreover it will be impossible to know the actual level of stocks and therefore impossible to control them.

Manufacturing organizations usually divide their "goods for sale" inventory into:

- *materials* and *components* scheduled for use in making a product (**Materials and Components** or **Raw Materials**)
- materials and components that have begun their transformation to finished goods (**Work in Process**, or WIP)
- **finished goods** - goods ready for sale to customers.

For example:

Manufacturing

A canned food manufacturer's materials inventory includes the foods to be canned, empty cans and their lids (or coils of steel or aluminum for constructing those components), labels, and anything else (solder, glue, ...) that will form part of a finished can. The firm's work in process includes those materials from the time of release to the work floor until they become complete and ready for sale to wholesale or retail customers. Its finished good inventory consists of all the cans of food in its warehouse that it has manufactured and wishes to sell to food distributors (wholesalers), to grocery stores (retailers), and even perhaps to consumers through arrangements like factory stores and outlet centers.

Logistics or distribution

The logistics chain includes the owners (wholesalers and retailers), manufacturers' agents, and transportation channels which an item passes through between initial manufacture and final purchase by a consumer. At each stage, goods belong (as assets) to the seller until the buyer accepts them. Distribution includes four components:

1. **Manufacturers' agents**: Distributors who hold and transport a consignment of finished goods for manufacturers without ever *owning* it. Accountants refer to manufacturers' agents' inventory as "matériel" in order to differentiate it from goods for sale.
2. **Transportation**: The movement of goods between owners. The seller owns goods in transit until the buyer accepts them. Sellers or buyers may transport goods but most transportation providers act as the seller's agents.
3. **Wholesaling**: Distributors who buy goods from manufacturers and other suppliers (farmers, fishermen, etc.) for re-sale work in the wholesale industry. A wholesaler's inventory consists of all the products in its warehouse that it has purchased from manufacturers or other suppliers. A produce-wholesaler (or distributor) may buy from distributors in other parts of the world or from local farmers. Food distributors wish to sell their inventory to grocery stores, other distributors, or possibly to consumers.
4. **Retailing**: A retailer's inventory of goods for sale consists of all the products on its shelves that it has purchased from manufacturers or wholesalers. The store attempts to sell its inventory (soup, bolts, sweaters, or other goods) to consumers.

Accounting perspectives

Financial accounting

An organization's inventory can appear a mixed blessing, since it counts as an asset on the balance sheet, but it also ties up money that might serve for other purposes and requires additional expense for its protection. Inventory may also cause significant tax expenses, depending on particular countries' laws regarding depreciation of inventory. (See Thor Power Tools Decision.)

Inventory appears as a current asset on an organization's balance sheet because the organization can turn it into cash by selling it. Some organizations hold larger inventories than their operations require in order to inflate their apparent asset value and their perceived profitability.

In addition to the money tied up by acquiring inventory, inventory also brings associated costs for space, for utilities, and for insurance to cover staff to handle and protect it, fire and other disasters, obsolescence, shrinkage (theft and errors), and others. Such holding costs can mount up: between a third and a half of its acquisition value per year.

Businesses that stock too little inventory cannot take advantage of large orders from customers if they cannot deliver. The conflicting objectives of cost control and customer service often pit an organization's financial and operating managers against its sales and marketing departments. Sales people, in particular, often receive commission payments, so unavailable goods may reduce their potential personal income.

FIFO vs. LIFO accounting

Main article: FIFO and LIFO accounting

When a dealer sells goods from inventory, the value of the inventory reduces by the cost of goods sold. For commodity items which one cannot track individually, accountants must choose a method to identify the nature of the sale. Two popular methods exist: FIFO and LIFO accouting (first in - first out, last in - first out). FIFO regards the first unit which arrived in inventory the first one sold. LIFO considers the last unit arriving in inventory as the first one sold. Which method an accountant selects can have a significant effect on net income and book value, and in turn on taxation. Using LIFO accounting for inventory, a company generally reports lower net income and lower book value, due to the effects of inflation. This generally results in lower taxation. Due to LIFO's potential to skew inventory value, UK GAAP and IAS have effectively banned LIFO inventory accounting.

Standard cost accounting

Standard cost accounting uses ratios called efficiencies that compare the labor and materials actually used to produce a good with those that the same goods would have required under "standard" conditions. As long as similar actual and standard conditions obtain, few problems arise. Unfortunately, standard cost accounting methods developed about 100 years ago, when labor comprised the most important cost in manufactured goods. Standard methods continue to emphasize labor efficiency even though that resource now constitutes a (very) small part of cost in most cases.

Standard cost accounting can hurt managers, workers, and firms in several ways. For example, a policy decision to increase inventory can harm a manufacturing managers' performance evaluation. Increasing inventory requires increased production, which means that processes must operate at higher rates. When (not if) something goes wrong, the process takes longer and uses more than the standard labor time. The manager appears responsible for the excess, even though s/he has no control over the production requirement or the problem.

In adverse economic times, firms use the same efficiencies to downsize, rightsize, or otherwise reduce their labor force. Workers laid off under those circumstances have even less control over excess inventory and cost efficiencies than their managers.

Many financial and cost accountants have agreed for many years on the desirability of replacing standard cost accounting. They have not, however, found a successor.

Theory of constraints cost accounting

Eliyahu M. Goldratt developed the theory of constraints in part to address the cost-accounting problems in what he calls the "cost world". He offers a substitute, called throughput accounting, that uses throughput (money for goods sold to customers) in place of output (goods produced that may sell or may boost inventory) and considers labor as a fixed rather than as a variable cost. He defines **inventory** simply as everything the organization owns that it plans to sell, including buildings, machinery, and many other things in addition to the categories listed here. Throughput accounting recognises only one class of variable costs: the operating expenses like materials and components that vary directly with the quantity produced.

Finished goods inventories remain balance-sheet assets, but labor efficiency ratios no longer evaluate managers and workers. Instead of an incentive to reduce labor cost, throughput accounting focuses attention on the relationships between throughput (revenue or income) on one hand and controllable operating expenses and changes in inventory on the other. Those relationships direct attention to the constraints or bottlenecks that prevent the system from producing more throughput, rather than to people - who have little or no control over their situations.

See also

- Manufacturing
- Distribution
- Logistics, Transportation
- Wholesaling
- Retailing
- Accounting
- Cost accounting
- Throughput accounting
- Eliyahu M. Goldratt
- List of theory of constraints topics
- Just in time
- Vendor-managed inventory
- Economic order quantity
- Operations research

External links

- Inventory Operations (http://www.inventoryops.com/)
- Tuppas Inventory Software (http://www.tuppas.com/Inventory-software/Inventory-software.htm)
- Business Aviator Inventory Software (http://www.businessaviator.com/myinventory.php)
- Academic Papers on RFID & inventory problems (http://yacine.rekik.free.fr/)

Retrieved from "http://en.wikipedia.org/wiki/Inventory"

Categories: Supply chain management | Distribution, retailing, and wholesaling | Commercial item transport and distribution | Production and manufacturing | Manufacturing | Generally Accepted Accounting Principles | Marketing | Industry | Operations research